USSR

LEZHOYEV, V. R., MITYUSHKIN, YU. I.

"Calculation of the Parameters of Gas Flow at the Output of a Profile Lattice With the Emission of Cooling Air"

Translation: Problems associated with the interaction of gas flow with a jet of cooling air coming from the trailing edge of the nozzle or working blades at a certain angle to the basic flow are discussed. It follows from the calculations that the angle β_2 of the emission of the flow decreases and the relative velocity of the mixture λ and the ratio of the total pressure P_2 at a certain cross section to the pressure P_1 rise depending on the increase in the relative quantity of cooling air ($G = 0.1$) being supplied to the slit from the concave side of the blade; this must be considered in determining the work of the turbine stage with air cooling of the blades. With an increase in the

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LEZHOYEV, V. R., MITYUSHKIN, YU. I., Tr. Leningr. korablestroit. in-ta, 1970, No. 70, pp 63-71

absolute difference in the angles β_1 and β' to 90° with a supply of cooling air to the concave portion, the angle β_2 decreases (where β' is the angle at which the flow of cooling air enters the basic flow) and λ_2 and P_2/P_1 increase. With an increase in the difference of the angles $\beta_1 - \beta'$ to 90° with injection of cooling air into the back edge of the blade, the angle β increases and λ_2 and P_2/P_1 are reduced. Consideration of the thickness of the output edges does not change the nature of the relationship of the angle β_2, λ_2 and $P_2:P_1$. 6 ill., 7 ref. L. P. D.

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UDC 621.438-71.018

USSR

LEZHOYEV, V. R., MITYUSHKIN, YU. I.

"Effect of the Emission of Cooling Air Into the Duct Portion of a Turbine on
the Economy of a High-Temperature Gas Turbine Engine"

Tr. Leningr. korablestroit. in-ta (Works of Leningrad Shipbuilding Institute),
1970, No. 70, pp 55-62 (from RZh-Turbostroyeniye, No 8, Aug 71, Abstract No
8.49.89)

Translation: The effect of the emission of cooling air into the duct portion
on the economy of the turbine stage as a whole is discussed. One of the
methods of using the energy of the cooling air to raise the economy of a high-
temperature turbine could be the application of jet flaps in nozzles and working
lattices of the turbine stage. The cooling air is emitted into the basic gas
flow close to the output edge of the nozzle or working blade at a certain
angle to the deflection of the gas flow. Analysis of the magnitude of the rela-
tive change in the efficiency at the periphery of the working wheel shows that
with an increase in the relative quantity of cooling air supplied to the duct

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USSR

LEZHOYEV, V. R., MITYUSHKIN, YU. I., Tr. Leningr. Korablestroit. in-ta, 1970, No. 70, PP 55-62

portion at an angle of 90°, the relative change in peripheral efficiency of the stage rises and for a relative emission of cooling air of 0.1 it reaches 16.3% in the case of the emission of cooling air into the duct portion from blades of the nozzle equipment and the working wheel. Injection only through the blades of the working wheel is less effective. A change in the difference in the angle of emission of the gas flow and the cooling air from the profile lattice leads to a rise in the relative change of the effective efficiency of the device and a relative change in the effective work. Most effective is emission of cooling air through the blades of the nozzle equipment. 5 ill., 5 ref. L. P. D.

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USSR   UDC 62-135-226.3:534.1

ALEKSEYEV, S. A., MOISEYEV, A. A., MITYUSHKIN, YU. I.

"Effect of the Nonradial Position of Guide Vanes on the Amplitude of Perturbing Forces in Axial Turbines"

Tr. Leningr. korablestroit. in-ta (Works of Leningrad Shipbuilding Institute), 1970, No. 70, pp 3-9 (from RZh-Turbostroyeniye, No 8, Aug 71, Abstract No 8.49.31)

Translation: Analysis of resonance high-frequency vibrations of turbine blades shows that the magnitude of dynamic bending stresses in the root section of the working blade at resonance vibrations can be reduced by lowering the magnitude of the pulse force and by reducing the bending stresses from the static action of gas forces. One of the ways of reducing static stresses of bending is to use stages with the absence of a radial gradient of static pressure, and another is to use a nonradial positioning of the guide vanes with respect to the output edges. The effect of the inclination of the guide vanes on the amplitude of the perturbing forces was investigated. The amplitude of perturbing forces acting on the working blade is considerably reduced under nonradial positioning of the

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ALEKSEYEV, A. S., et al, Tr. Leningr. korablestroit. in-ta, 1970, No. 70, pp 3-9

output edges of the guide vanes. To lower the impulse of the perturbing force acting on the working blade, any inclination of the output edges of the guide vanes has a positive effect at all harmonics of the perturbing force. Simultaneously, a deflection of the guide vanes with a concavity toward the axis of the turbine leads in addition to a decrease in the bending stresses from the static action of gas forces. The amplitude of high harmonics is sharply reduced at small angles of inclination and with an increase in the ratio of the magnitude of the angle of the output flow from the nozzle at the root of the working blade to the magnitude of the step angle of the guide vane, the amplitude changes sinusoidally with a maximum amplitude several times less than the amplitude of the perturbing forces with a radial positioning of the output edges of the guide vanes. 5 ill., 7 ref. L. P. D.

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UDC 533.697

USSR

ARTEM'YEV, N. S., KORZUNCV, Yu. L., MITYUSHKIN, Yu. I.

"Calculation of Flow in a Nozzle Grid With Nonradial Positioning of the Blades"

Tr. Leningr. koorablestroit. in-ta (Works of Leningrad Shipbuilding Institute), 1971, No. 73, pp 3-11 (from RZh-Mekhanika, No 8, Aug 72, Abstract No 8B482)

Translation: The approximation method proposed for calculating flow in an annular grid with a nonradial positioning of the nozzle blades is a development of a method presented in a previous paper (see Artem'yev, N. S. and Mityushkin, Yu. I., Energomashinostroyeniye, No. 12, 1967). The method is based on the introduction of approximation relationships in the equations for the meridional lines of flow. The attenuation parameters and losses along the radius are assumed constant in the solution of the problem and the radial gradient of the density is neglected, since this can be ensured by an appropriate inclination of the blades. The shape of the limiting surfaces and the geometry of the nozzle blades are assumed given. Integration of the system of equations obtained under these assumptions is carried out by the Runge-Kutta method. In the first example considered

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the equation of the meridional line is approximated by a cosinusoidal line. It is shown that this solution is applicable only for thin sheet blades. In the case of thick blades it is necessary to take into account the rise in the lines of flow in the input section of the annular nozzle grid which leads to greater curvature of the meridional lines of flow. In the first approximation this is done by an approximation of the equation for the meridional line of flow by a fourth degree polynomial. In the second approximation a fifth degree polynomial is used that ensures accuracy sufficient for practical purposes. 14 ref. A. G. Plotkin.

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UDC 621.4/.6:533.6

USSR

DEREVENKO, V. A., MITYUSHKIN, Yu. I.

"Study of Gas Flow in Turbine Stages With a Twist of the Blades From the Condition β_1 = const"

Translation: The effect of a radial gradient $\partial\alpha_1/\partial r_1$ of the exit angle of flow from a nozzle determining the intensity of reverse twist on the change in the basic parameters of the stage along the blade is investigated theoretically: the exit angle of flow to the blade in relative motion, the exit angle from the working wheel, the degree of reactivity and the work of the gas. The study was made considering the curvatures of the meridional lines of flow caused by the reverse twist of the nozzle blades for three types of active stages with different reverse twist, and one "gradientless" reactive stage with working blades of constant cross section ($\delta\beta_2 = \beta_{2p} - \beta_{2v} = 3° 40'$) and a twist of the nozzle blades given by $r_1/\text{sine}(\beta_1 - \alpha_1)$ = const. Formulas for $\partial\tan\alpha_1/\partial r_1$ are given for all these

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USSR

cases. The nozzles for all these stages have the same degrees of expansion for the same angle of exit from the nozzles at an average radius $\alpha_{1av} = 16°$. The calculations were made on the "Minsk-1" computer by the Runge-Kutta consecutive approximation method. The basic results were: (1) it is necessary to take into account the curvature of meridional lines of flow in calculating the stages with a twist obtained from the condition β_1 = const; (2) in the event of overlap at the top of the working blade, the calculation should be carried out considering the different deflection of the lines of flow in the nozzle and working collars for cylindrical bounded surfaces of the circulating section; (3) in active stages with untwisted working blades the intensity of the reverse curvature of the nozzle in the range of difference in angles studied $\delta\alpha_1 = \delta\alpha_{1p} - \alpha_{1v} = 7°$, $18' - 11° 56'$ has practically no effect on the distribution of flow parameters and the characteristics of the stage along the radius; (4) in reactive stages with a twist of the blades determined from the condition β_1 = const there occurs a considerably greater drop in the reactivity gradient than in active stages. 8 ref. A. G. Plotkina.

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USSR   UDC 612.014.41

BRESLAV, I. S., VOLKOV, B. N., and MITYUSHOV, V. M., Laboratory of Respiratory
Physiology, Institute of Physiology imeni I. P. Pavlov, Academy of Sciences USSR

"Recording Human Respiration in Pressure Chamber Experiments"

Abstract: The parameters of human respiration in a pressure chamber often have to
be recorded in experiments designed to study the effect of a rarefied atmosphere
and hypoxia on physiological functions. However, there are some difficulties in
carrying out such experiments, e.g., the small size of the chamber cannot accommo-
date a clumsy piece of apparatus like a spirograph, and if the spirograph is placed
outside, it cannot function normally because of the difference in air pressures
inside and outside the chamber. A further complication arises when the subject
is required to inhale gaseous mixtures of different compositions. To overcome
these difficulties, the authors designed a compensating valve that is mounted in
the wall of a standard PBK-53 pressure chamber. The subject inhales gaseous mix-
tures from a spirograph passed through tubes connected to the valve.

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1/2   006   UNCLASSIFIED   PROCESSING DATE--13NOV70
TITLE--CONTINUOUS ALKYLATION OF PHENOL IN THE PRESENCE OF BENZENESULFONIC
 ACID ON INDUSTRIAL APPARATUS -U-
AUTHOR-(05)-TEMIRGALIYEV, T.G., MITZOFANOV, M.G., BOBYLEV, V.V., DEREKH,
 P.A., RUMYANTSEV, A.G.
COUNTRY OF INFO--USSR

SOURCE--NEFTEPERERAB. NEFTEKHIM. (MOSCOW) 1970, (5), 20-1 (RUSS)

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--AKLYLPHENOL, BENZENE, SULFONIC ACID, INDUSTRIAL PRODUCTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/1076   STEP NO--UR/0318/70/000/005/0020/0021

CIRC ACCESSION NO--AP0134765
                      UNCLASSIFIED

CIRC ACCESSION NO--AP0134765
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. BY CONTINUOUS AS COMPARED WITH
PERIODIC ALKYLATION, THE PRODUCTION OF ALKYL PHENOLS WAS INCREASED FROM
50-60 TO 90-180 KG-HR PER M PRIME3 REACTION VOL., PHOH CONVERSION TO
SMALLER THAN OR EQUAL TO 98PERCENT, THE COMPN. AND COLOR OF ALKYLATION
PRODUCTS WAS CONST., AND THE PROCESS COULD BE READILY CONTROLLED. THE
CONTINUOUS PROCESS AND ELIMINATION OF WATER WASHING OF THE ALKYL PHENOLS
PRODUCED FOR PREPN. OF ADDITIVES HAD HIGH ECONOMIC EFFICIENCY.
FACILITY: NEFTEPERERAB. ZAVOD, VOLGOGRAD, USSR.

UNCLASSIFIED

USSR

UDC 621.373.826

SKVORTSOV, B. V., FIRSOV, V. M., MIUSKIN, V. YE., KURITSYN, I. A.

"Gas Discharge Pulse Tube for Pumping Lasers"

USSR Author's Certificate No 292568, filed 1 Nov 67, published 30 Nov 71 (from RZh-Radiotekhnika, No 5, May 72, Abstract No 5D286P)

Translation: A gas discharge pulse tube for pumping lasers has been patented the bulb of which is executed from quartz glass with alloying substances injected in it. In order to vary the structural characteristics of the tube radiation in such a way that it will correspond to the absorption (excitation) spectrum of the active substance and increase the energy supplied to the active substance without increasing its operating temperature, the sesquioxides of elements of the lanthanide group are used as the alloying substances.

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USSR   UDC 62-135-154-253.5:534.1:539.4.001.6

MOISEYEV, A. A., MIYUSHKIN, YU. I., ALEKSEYEV, S. A., FILATOV, V. I.

"Modernization of an Air Stand to Study the Vibration Strength of the Working Blades of an Axial Turbine"

Tr. Leningr. korablestroit. in-ta (Works of Leningrad Shipbuilding Institute), 1970, No. 70, pp 79-88 (from RZh-Turbostroyeniye, No 8, Aug 71, Abstract No 8.49.35)

Translation: It is reported that a modernization was carried out on the VS-1 stand for studying dynamic stresses of bending in working blades of axial turbines under resonance oscillations at the Laboratory of Ship Turbines of Leningrad Order of Lenin Shipbuilding Institute. The modernization of the stand consisted of replacing the induction brake with an air brake and in equipping the stand for simultaneous study of vibration stresses in the working blades and the characteristics of the experimental turbine. Adjustment tests completed on the stand showed that with a working grid of circular cylinders the stand can operate in a turbine regime and with a working grid of

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USSR

MOISEYEV, A. A., et al, Tr. Leningr. korablestroit. in-ta, 1970, No. 70, pp 79-88

plates both turbine and compressor regimes are possible. Studies made on the vibrations of cylinders and plates under conditions of a turbine stage showed that the modernization of the stand makes it possible to carry out aerodynamic experiments simultaneously with tensometric studies of the dynamic strength of elastic rods (cylinders of plates and working blades). These experiments make it possible to determine qualitatively the structure of perturbing forces (pulses) at high-frequency resonances and to determine the economy of a turbine stage with various structural features for decreasing the dynamic bending stresses under blade vibrations. 7 ill., 20 ref. L. P. A.

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UDC: 621.396.622.2:621.372.622

USSR

MIZAYLOV, V. N.

"A Superhigh-Frequency Mixer Based on a Tunnel Diode for Rebroadcasting Antenna Systems"

Tr. Kazan. aviats. in-ta (Works of the Kazan Aviation Institute), 1970, vyp. 104, pp 29-37 (from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12D40)

Translation: The author gives the principles of operation of a frequency converter based on a tunnel diode for the SHF range. A converter for the first harmonic is considered in more detail. An analysis is given of phase distortions in a re-emitted signal due to beating of the amplified frequencies of signal and re-emission. Conditions are found under which these distortions are minimized. Test results are given for an experimental model of a rebroadcasting frequency converter on the first harmonic. Bibliography of 7 titles. N. S.

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TITLE--ON STUDY OF BEETLE FAUNA FROM THE COCCINELLIDAE FAMILY IN SUBZONES
   OF SHEEP'S FESCUE, FEATHER, GRASS AND MUGWORT, SHEEP'S FESCUE, FEATHER,

AUTHOR--MIZER, A.V.

COUNTRY OF INFO--USSR

SOURCE--VESTNIK ZOOLOGII, 1970, NR 3, PP 54-59

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--INSECTA, PLANT PARASITE

CONTROL MARKING--NO RESTRICTIONS

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CIRC ACCESSION NO--AP0130162
                            UNCLASSIFIED

CIRC ACCESSION NO--AP0130162
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN SUBZONES OF SHEEP'S FESCUE,
FEATHER, GRASS STEPPE 59 SPECIES (26 GENERA) OF BEETLES FROM THE
COCCINELLIDAE FAMILY WERE FOUND. AT THE PLATEAU 27 SPECIES ARE FOUND,
MOST OF THEM ARE CONCENTRATED ON THE AGRICULTURAL CROPS (23 SPECIES) AND
IN FOREST BELTS (13 SPECIES). 13 SPECIES INHABIT THE SLOPES OF RAVINES.
THE MAJORITY OF COCCINELLIDAE (32 SPECIES) INHABITS THE VALLEYS OF
RIVERS, WHERE 22 SPECIES (MAINLY, MESOPHILIC FORMS) WERE FOUND IN BROAD
LEAVED FORESTS AND 25 SPECIES IN FLOW MEADOWS. IN THE SUBZONE OF
MUGWORT SHEEP'S FESCUE, FEATHER, GRASS STEPPE 33 SPECIES (21 GENERA) OF
COCCINELLIDAE ARE REGISTERED. THE STEEP XEROPHILS ARE TYPICAL
INHABITANTS OF THIS SUBZONE. 11 SPECIES ARE FOUND ON SANDY SHELLY BARS,
8 ON SOLONCHAKS, 12 SPECIES (STEPPE XEROPHILS PREDOMINATING) ON THE SEA
COAST. AS TO THE ZOOGEOGRAPHICAL ELEMENTS, THE EUROPEAN ONES ARE
PRESENTED BEST OF ALL.   FACILITY: STATE UNIVERSITY, KHARKOV.

UNCLASSIFIED

USSR

UDC: 681.3.055

GRUDININ, M. M., MIZERNYUK, A. T., "Order of Lenin" Institute of Cyber-
netics, Academy of Sciences of the Ukrainian SSR

"A Device for Scaling and Squaring Pulse Signals"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki,
No 9, Mar 72, Author's Certificate No 331385, Division G, filed 22 Sep 70,
published 7 Feb 72, p 151

Translation: This Author's Certificate introduces a device for scaling and
squaring pulse signals. The device contains an n-place pulse counter whose
one-output terminals are connected to the first inputs of the corresponding
coincidence circuits. As a distinguishing feature of the patent, the de-
vice is designed for improved accuracy in computations. It contains an
additional 2n-place counter and a delay line with $n+1$ elements. The input
of the delay line is connected to the input of the additional pulse counter.
The output of the third delay line element is connected to the input of the
main pulse counter, the outputs of all elements except the third being con-
nected to the second inputs of the coincidence circuits. The output of the
i-th coincidence circuit ($i = 0,...,n$) is connected to the counting input of
the $(i+1)$-th place of the auxiliary pulse counter.

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MIZERNYUK, A. T.

Cybernetics

UDC: 62.50:007.616-006

127. USSR

MIZERNYUK, A. T., SAMSIN, Ye. M.

SO: Foreign Press Digest

31 March 91

"System for Automation of Scientific Experiments in the Area of Oncology"

Kiev, Mekhanizatsiya i Avtomatizatsiya Upravleniya, No 5, Sept-Oct 70, pp 40-42

Abstract: The manual data processing methods primarily used in processing of oncolog-
ical data increase the time required for production of results and reduce the produc-
tivity of labor. The problem is particularly acute in the processing of graphic
measurement information and the statistical processing of patients' case histories.
The Institute of Cybernetics of the Academy of Sciences UkrSSR has studied the possi-
bilities for improving the situation at the clinics and laboratories of the Kiev
Scientific Research Institute for Experimental and Clinical Oncology. The informa-
tion produced in this study have defined the tasks and functions for an automation
system and have been used as initial data to determine the structure of a system.
Inovations include: elimination of the intermediate graphic representation of in-
formation, replaced by direct analog-to-digital conversion of the outputs of test
instruments; use of a system for automation of scientific experiments based on the
Dnepr-1 computer to control the operation of a microspectrophotometer, dual-beam
infrared prism spectrometer and electron paramagnetic resonance installation through

1/2

MIZETSKAYA, I. B.

JPRS 59208
6-73

2

III-14. PHASE TRANSFORMATIONS TO THE PSEUDOBINARY CdSe-CdTe SYSTEM AND OBTAINING
SINGLE CRYSTALS OF SOLID SOLUTIONS

[Article by G. S. Oleynik, I. B. Mizetskaya, L[?]; Novosibirsk, III Sipozium
po Protsessam Rosta i Sinteza Poluprovodnikovykh Kristallov i Plenok, Russian,
12-17 June, 1972, p 40]

The substitution solid solutions based on CdSe and CdTe are of interest
in connection with the valuable semiconductor properties of the initial components.

The semiconducting solid solutions, along with a number of interesting
specific properties, permit smooth variation of the basic physical parameters
of the semiconductors depending on their composition.

The growth of semiconductor single crystals of solid solutions from a
melt and correct interpretation of the properties of the semiconductor at in-
creased temperatures are impossible without knowing all the phase transformations
in the solutions.

The phase equilibrium of the solid state and melt in the CdSe-CdTe system
of different composition and the phase transformations below the solidus line
were studied. The solid state and melt equilibrium was studied using the dif-
ferential-thermal analysis by the heating and cooling curves of uniform alloys.

It was established that the binary compounds CdSe and CdTe form substitution
solid solutions in the entire concentration range.

The phase transformations in the solid state were studied by means of
the seed crystal method. It was established that the width of the two-phase
region of the alloys is approximately 2-2.5 percent. The position of the
two-phase region with respect to the solid solution concentrations varies de-
pending on the annealing temperature.

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UDC   543.73:539.239

USSR

MIZETSKAYA, I. B., MATAT, L. M., and OLEYNIK, N. D.

"Determining Ultramicroscopic Cobalt Impurities in Semiconductor Materials of the $A^{II}B^{VI}$ Type"

Kiev, Poluprovodnikovaya tekhnika i mikroelektronika, No. 6, 1971, pp 64-69

Abstract: The purpose of the research described in this article is to develop highly sensitive variants for the determination of small weights of cobalt impurities, in the original material from which semiconductors are manufactured, of the order of 0.5 grams. Kinetic and chemical-luminescent methods of analysis were used. The method was developed with the use of pure solutions, in triple-distilled water, and was checked through application to real specimens of monocrystals and semiconductor films. The kinetic and chemical-luminescent methods are explained, and tables of the cobalt determinations are presented. Cobalt contents of the order of 10^{-5} to $5 \cdot 10^{-8}\%$ of one gram of the total material can be detected by this method, with an average relative error of 20%. The authors are connected with the Semiconductor Institute, Ukrainian Academy of Sciences

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UDC   543.73

USSR

MIZETSKAYA, I. B., MATAT, L. M., and LEDYAYEVA, N. I.

"Determining Ultramicroscopic Silver Impurities in Semiconductor Materials of the $A^{II} B^{VI}$ Type by the Kinetic and Polarographic Methods"

Kiev, Poluprovodnikovaya tekhnika i mikroelektronika, No. 6, 1971, pp 58-64

Abstract: A highly sensitive method for determining ultramicroscopic quantities of silver in small suspensions of material in CdS type compounds through the use of kinetic and polarographic methods is developed. Such determinations are important since silver has a definite effect on the physical characteristics of $A^{II}B^{VI}$ semiconductors. The analysis is conducted on CdS monocrystals, weighing 0.5-1.0 g, dissolved in concentrated nitric acid, first at room temperature and then with heating. The reaction sensitivity for the kinetic method is $1 \cdot 10^{-2}$ μg of Ag in 25 ml of the solution. For the polarographic method, the sensitivity is of the order of 10^{-5} to $10^{-7}\%$, levels made possible through the use of solid electrodes of graphite made of graphite paste mixed with alpha-brominaphthalene. Determination data are given in tabular

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USSR

MIZETSKAYA, I. B., et al., Poluprovodnikovaya tekhnika i mikroelektronika,
No 6, 1971, pp 58-64

form.   The average relative error in these determinations amounts to 15-20%.
The authors are with the Semiconductor Institute, Ukrainian Academy of
Sciences.

Mechanical Properties

UDC 620.186.14:669.14:620.178.385   )

USSR   M

KHARISH, Ye. L., ZLOTNIKOV, S. A., YAREMA, S. Ya., KUSLITSKIY, A. B., and
MIZETSKIY, V. L., Institute of Physico Mechanics, Academy of Sciences Ukrainian
SSR

"Effect of Nonmetallic Inclusions on the Impact Strength of Low-Carbon Steel"

Moscow, Metallovedeniye, No 5, May 70, pp 58-60

Abstract: Steel 20 was melted so as to produce specific types of inclusions:
lamellar (unsaturated) silicates, aluminum oxide, silicon dioxide, and titanium
nitrides. The chemical composition of all heats was in the following ranges (%):
0.19-0.21 C, 0.21-0.23 Si, 0.35-0.37 Mn, 0.1 Cr, 0.16 Ni, 0.011-0.012S, 0.010-
0.012 P, and less than 0.01 N. Hydrogen and oxygen content varied from 0.00010-
0.00034% and 0.0048-0.022% respectively. Mechanical properties were affected only
slightly by the inclusions and had the following values: TS--46-48 kg/mm², YS--27-29
kg/mm², elongation--33-35%, reduction in area--66-68.5%, and impact strength--14-
16.5 kg/mm². Standard impact test specimens were used for testing.
    It was found that the durability of longitudinal samples was better than for
transverse samples and at negative temperatures the fatigue strength is greater
than at room temperature. The poorest durability was found in samples which had
lamellar silicate inclusions in the grain boundaries. The durability of samples

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USSR

KHARISH, Ye. L., et al., Metallovedeniye, No 5, May 70, pp 58-60

containing the other types of nonmetallic inclusions was 1.2 to 2.2 times better. Maximum durability was noted in samples containing alumina inclusions. The relatively favorable effect of these inclusions was evidently caused by the low magnitude of residual stresses developed in the steel due to comparatively small differences in the modulus of elasticity and volume coefficients of thermal expansion of the inclusions and the metallic matrix. High strength of the silica and titanium nitride inclusions and the large difference in the coefficients of expansion of these particles and the matrix cause considerable residual stresses in the inclusions and lead to earlier rupture than in samples with alumina inclusions. Anisotropy was more noticeable in transverse samples when tested at room temperature. Also, with increased stress the magnitude of anisotropy increased.

Lowering of durability in transverse specimens was caused by the presence of stringer inclusions positioned perpendicular to the direction of applied stress. At small loads, the concentration of stresses in the inclusions is less dangerous. As local stresses grow in transverse samples the yield point is reached much sooner than in longitudinal samples. At negative temperatures the steel is more brittle, but the difference in concentration of stresses in longitudinal and transverse samples becomes less significant and their durability is almost the same.

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USSR

POPOVICH, V. V., BICHUYA, A. L., ZAMORA, M. F., MIZETSKIY, V. L., SHIL'NIKOVA,
G. K., BEREZHKO, B. I., and CHAYEVSKIY, M. I., Institute of Physico Mechanics,
Academy of Sciences, UkrSSR, L'vov; L'vov Polytechnical Institute

UDC 620.172:193.57

"Influence of Smelting Method on the Physical and Mechanical Properties of
15KhS1MFB Steel"

Abstract: The corrosion resistance and long-term strength of ordinary and
vacuum-smelted 15KhS1MFB steel were studied in a fused lead-bizmuth eutectic.
The changes in microstructure, microhardness, coercive force, and electrical
resistance of specimens tested for corrosion and long-term strength were
studied. It is demonstrated that 15KhS1MFB steel, regardless of the method
of smelting, is little influenced by the eutectic Pb-Bi alloy at 470-550°C.
The vacuum-smelted steel has practically the same long-term strength as the
ordinary steel, but somewhat better plasticity.

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USSR   UDC 539.434.539.219.1

KARPENKO, G. V., KUSLITSKIY, A. B., MIZETSKIY, V. I., ZLOTNIKOV, S. A., TKACHEV,
V. I., SHIL'NIKOVA, G. K., and BEREZHKO, B. I., L'vov, Leningrad

"Effect of the Composition of Nonmetallic Inclusions on the Fatigue Limit of
Steel 20"

Abstract: Qualitative investigations were made of programmed amounts of impuri-
ties in steel. In connection with this, experiments were conducted on the forma-
tion in steel of non-metallic inclusions of a given chemical composition: plastic
silicates, alumina and high-alumina alumosilicates, semi-brittle silicates, and
titanium nitrides. It is shown that the composition of non-metallic inclusions
has a significant effect on the fatigue limit of the steel. Of the four types
of inclusions studied, the most damaging proved to be plastic unsaturated sili-
cates and titanium nitrides; silica inclusions were the least damaging. The
principal negative role of non-metallic inclusions results in the appearance of
considerable residual stresses owing to the difference in the physical properties
of the inclusions and the metal matrix. These stresses are formed in the metal
during unavoidable technological heating and cooling, even before external forces
are applied.
1/1

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USSR

UDC 621.396.67.001.24

DYMSKIY, V. N., MIZGAYLOV, V. N., MALYSHEV, L. A.

"A Method of Practical Synthesis of Antenna Systems"

Translation: A procedure for the formation of the radiation pattern of an antenna system by utilizing experimentally recorded radiation patterns of individual sources is discussed. The problem of synthesizing an antenna system comprising discrete radiators located near a metallic body of complex geometric configuration is stated and solved. The radiation pattern implemented is represented in the form of a generalized Fourier series with respect to natural harmonics. Estimates are made of the accuracy of the solution of the problem of practical antenna synthesis. The theoretical principles are illustrated by a specific example of synthesis of an antenna system with respect to a given radiation pattern comprising three radiators of the magnetic type located on the conical junction between two cylinders of different diameters. The statistical calculation results are presented. There are 3 illustrations, 1 table and a 6-entry bibliography.

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USSR

UDC: 621.396.677.01

DYMSKIY, V. N., GAVRILOV, A. M., MIZGAYLOV, V. N., MOROZOV, G. A., CHONI, Yu. I.

"Synthesis of Antennas on the Basis of Experimental Data"

Tr. Kazan. aviats. in-ta (Works of the Kazan' Aviation Institute), 1970, vyp. 104, pp 19-28 (from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12B7)

Translation: The authors analyze formulation of the problem of synthesizing antennas as a problem of calculating the distribution of current density in a region of predetermined geometric configuration with respect to a pre-determined complex vector radiation pattern. In this formulation, the problem reduces to solution of an operator equation. A physical interpre-tation is given for the operators appearing in this equation; consideration is given to the feasibility of determining these operators from experimental data. Practical examples are analyzed. Four illustrations, bibliography of six titles. N. S.

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USSR   UDC: 621.396.677.01

MIZGAYLOV, V. N.

"Probabilistic Estimates of Accuracy in Solving the Problem of Synthesizing
Antennas With Experimental Determination of the Direct Operator of the
Problem"

<u>Tr. Kazan. aviats. in-ta</u> (Works of the Kazan' Aviation Institute), 1970,
vyp. 122, pp 25-30 (from <u>RZh-Radiotekhnika</u>, No 12, Dec 70, Abstract No 12B8)

<u>Translation:</u> Expressions are found for the change in the mean-square error
of deviation of the actual radiation pattern from the predetermined pattern,
and other statistical parameters of the process of synthesis. These expres-
sions may be used as a basis in formulating requirements for accuracy in
carrying out an experiment. Bibliography of four titles. N. S.

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MIZHERITSKIY, G. Sh.

GUIDE TO BUILDING COMMUNICATION CABLE INSTALLATIONS

3.4. Main-Line High-Frequency Symmetrical Cables

Types of Cables

For main-line communications, the following types of cables are used: MKS, with cordel-styroflex insulation in a lead casing; MKSA, with cordel-styroflex insulation in an aluminum casing; and MK, with cordel-paper insulation in a lead casing.

These cables are fabricated in a spiral quad, and the diameter of the wires is 1.2 mm; the capacitance 1x4, 4x4 and 7x4.

MKS Cables with Cordel-Styroflex Insulation in a Lead Casing

(GOST (All-Union State Standard) 9046-59)

Main-line MKS cables with cordel-styroflex insulation are intended for main cable lines, multiplexed with K-60 high-frequency apparatus in the spectrum of frequencies up to 252 kilohertz with a remote power supply of up to 750 volts direct current and KRR multiplexing, in the spectrum up to 552 kilohertz. The cables are produced with 1, 4 or 7 high-frequency quads. Aside from this, 4x4 cables may have five signal wires, and 7x4 cables 6 signal wires. The diameter of the copper current-conducting wires of the high-frequency quads is 1.2 mm, and that of the signal wires 0.9 mm. Depending upon the type of protective covers, the cables are marked as follows: MKSG, in a lead casing, bare; MKSB, armored with steel ribbons; MKSBV, armored with steel ribbons, lead casing protected by a polyvinyl chloride hose or ribbons; MKSK, armored with round wires; MKSKV, armored with round wires, lead casing protected by polyvinyl chloride hose or ribbons;

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USSR   UDO 621.391.3

MIZIN, IGOR' ALEKSANDROVICH; URINSON, LEONID SAVEL'YEVICH; KHRAMESHIN,
GENNADIY KUZ'MICH

"Information Transmission In Networks With Switching Of Traffic"

Abstract In the book problems are considered on the construction and operation
of information networks (IN) with switching of traffic. Initial data are de-
termined for the planning and for the totality of the indices of the effective-
ness of functioning of an IN. A description of a model of an IN is given as
well as the principles of construction of the primary elements of the network--
channels of data transmission and units for switching traffic.

CONTENTS

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USSR

MIZIN, IGOR' ALEKSANDROVICH, et al., Peredacha informatsii v setyakh s kommutatsiyey soobshcheniy, Moscow, Izd. "Svyaz'," 1972. 320 pp. ill. 141 ref. 1 r 51 k.

USSR

MIZIN, IGOR' ALEKSANDROVICH, et al., Peredacha informatsii v setyakh s kommutatsiyey soobshcheniy, Moscow, Izd. "Svyaz'," 1972. 320 pp. ill. 141 ref. 1 r 51 k.

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USSR

MIZIN, IGOR' ALEKSANDROVICH, et al., Peredacha informatsii v setyakh s kommutatsiyey soobshcheniy, Moscow, Izd. "Svyaz'," 1972. 320 pp. ill. 141 ref. 1 r 51 k.

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USSR

MIZIN, IGOR' ALEKSANDROVICH, et al., Peredacha informatsii v setyakh s
kommutatsiyey soobshcheniy, Moscow, Izd. "Svyaz'," 1972.   320 pp. ill. 141
ref. 1 r 51 k.

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USSR

MIZIN, IGOR' ALEKSANDROVICH, et al., Peredacha informatsii v setyakh s
kommutatsiyey soobshcheniy, Moscow, Izd. "Svyaz'," 1972, 320 pp. ill. 141
ref. 1 r 51 k.

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USSR

MIZIN, IGOR' ALEKSANDROVICH, et al., Peredacha informatsii v setyakh s kommutatsiyey soobshcheniy, Moscow, Izd. "Svyaz'," 1972. 320 pp. ill. 141 ref. 1 r 51 k.

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USSR

MIZIN, IGOR' ALEKSANDROVICH, et al., Peredacha informatsii v setyakh s kommutatsiyey soobshcheniy, Moscow, Izd. "Svyaz'," 1972. 320 pp. ill. 141 ref. 1 r 51 k.

8/8

USSR

UDC: 51:330.115

MIZIN, I. A.

"Problems of Data Transmission in Large Control Systems"

V sb. Nauch. i prakt. probl. bol'shikh sistem. Sekts. Bol'shiye sistemy. Teoriya, Metodol., modelir. (Scientific and Practical Problems of Large Systems--collection of works. Large Systems Section. Theory, Modeling, Methodology), Moscow, "Nauka", 1971, pp 140-158 (from RZh-Kibernetika, No 12, Dec 71, Abstract No 12V862)

[No abstract]

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MIZIN, V. F.

MEDICINE

ELECTROCARDIOGRAPHIC EXAMINATION ON SHIPS

UDC 616.12.073.97

Functional methods of examining the cardiovascular system are being increasingly used in the daily work of ship surgeons. Up to now, however, the EKG method has not been widely used on ships. Apparently because it is laborious and insufficiently informative due to interference (vibration, high-frequency and ultrahigh-frequency fields, and so forth). Yet the increase in cardiovascular pathology among ship crews in recent years and the delays in diagnosing it on board ship clearly require more extensive employment of electrocardiography.

We developed and tested an EKG technique for investigating cardiovascular function in seamen on ships. To standardize it, we took 800 EKG's of 46 persons age 18 to 59, members of the crew of the motor ship Pyatidesyatiletiye Kymmonia during a 113-day cruise. All received a physical examination before the voyage and were deemed essentially healthy.

The EKG was recorded on an OBI Krasnogvardeyets under constant operating conditions (1 mv = 10 mm) from 10 leads using standard electrodes, no rearrangement, with the patient lying down. The following leads were also used: manubrium -- xiphoid process, "M", with electrodes of our own design connected to terminals of the standard lead II both in lying position and while moving. We chose the bipolar thoracic lead because it is superior to others in noise resistance, convenience of handling, and diagnostic value. The electrodes were placed long the median line of the sternum; one in the region of the manubrium (M) connected to the RM terminal, and the other in the projection of the xiphoid process (X) connected to the LM terminal. The disk electrodes 20 mm in diameter and 0.3 mm thick were made of bronze with the skin surface silver plated and with shallow depressions for the paste. BRhV wire (twin-core, cuprite, 0.35 mm² gage) 100 cm long was used as the conductor from the lead. The wire ended in a miniature plug used to connect the plugs of the apparatus cable (Fig. 1).

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1/2   020   UNCLASSIFIED   PROCESSING DATE--04DEC70
TITLE--THERAPEUTIC RESULTS IN PATIENTS WITH PEMPHIGUS TREATED WITH
CORTICOSTEROIDS AND INTERFERON APPLICATIONS -U-
AUTHOR-(02)-SMELOV, N.S., MIZONOVA, T.P.

COUNTRY OF INFO--USSR

SOURCE--VESTNIK DERMATOLOGII I VENEROLOGII, 1970, NR 6, PP 61-62

DATE PUBLISHED------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--SKIN DISEASE, CORTICOSTEROID, INTERFERON, DRUG TREATMENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3005/0468   STEP NO--UR/0206/70/000/006/0061/0062

CIRC ACCESSION NO--AP0132683
                            UNCLASSIFIED

CIRC ACCESSION NO--AP0132683
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. INTERFERON WAS USED FOR 18
PATIENTS WITH DIFFERENT FROMS OF PEMPHIGUS IN WHOM TREATMENT WITH
CORTICOSTEROID DRUGS HAD FAILED TO RESULT IN THE HEALING OF ALL THE
EROSIONS. UNDER THE EFFECT OF INTERFERON IN 8 PATIENTS EROSIONS WERE
COMPLETELY EPITHELIZED, IN 7 PATIENTS CONSIDERABLE IMPROVEMENT WAS
ACHIEVED, AND IN 3 PATIENTS ONLY INSIGNIFICANT TEMPORARY IMPROVEMENT WAS
OBSERVED.   FACILITY: OTDEL DERMATOLOGII TSENTRAL'NOGO
NAUCHNO-ISSLED. KOZHNO VENEROLOGICHESKOGO INSTITUTA, MOSKVA.

USSR

UDC 547.26'118

MIZRAKH, L. I., BABUSHKINA, T. A., YAKOVLEV. V. G., KOZLOVA, L. N., YUKHNO, Ye. M., STAROSTINA, L. N., and YANOCHKINA, G. A.

"Phosphorus-Containing Derivatives of Isothiuronium. III. Alkylation of Thiourea with Diethyl Chlorophosphate and the Diethyl Ester of 2-Bromoethyl-phosphonic Acid"

Abstract: It was established that the metaphosphate of S-ethylisothiuronium formed upon the reaction of diethyl chlorophosphate with thiourea. A study of the reaction of O, O-diethyl 2-bromethylphosphonate with thiourea showed that in this reaction, as distinguished from that with alpha-halophosphonates (Mizrakh et al, Zh. Obshch. Khim., Vol 41, 2654, 1971), which proceeded in the opposite order, alkylation of thiourea with the haloalkyl group took place initially, while participation of the ester group of the alkylation occurred only under more severe conditions. On further heating of the product $(EtO)_2 P(O)CH_2CH_2 \cdot SC(NH_2)_2 Br^-$ that formed initially, EtBr evolved and the product $O_2\bar{P}(OEt) \cdot CH_2CH_2SC(NH_2)_2$ was obtained.

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1/2   014   UNCLASSIFIED   PROCESSING DATE--04DEC70
TITLE--MONALKYL, MONARYL, ESTERS OF ALKYLPHOSPHINIC ACIDS -U-

AUTHOR-(03)-PETROV, K.A., YEVDAKOV, V.P., MIZRAKH, L.I.

COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 159,824
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,
DATE PUBLISHED--26JAN70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--PHOSPHINIC ACID, ORGANIC PHOSPHORUS COMPOUND, ESTER, CHEMICAL
  PATENT, CHEMICAL SYNTHESIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3007/1748   STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0136988
                    UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AA0136988
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TITLE COMPDS. ARE PREPD. BY
TREATING DIALKYLPHOSPHINIC ACID DICHLORIDE WITH 1 MOLE H SUB2 O AND THEN
WITH 1 MOLE ALC. OR PHENOL.

UNCLASSIFIED

USSR   UDC 547.26'118

MIZRAKH, L. I., YAKOVELEV, YUKHNO, YE. M., and MAMONOV, V. I.

"Phosphorus-containing Derivatives of Isothiurones. II. Cleavage of Dioxaphospholane and Dioxaphosphorenane Rings by Thiocarbamide"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), No 8, 1972, pp 1700-1705

Abstract: Thiocarbamide (TCA) will react with 1,3,2-dioxaphospholane by opening the ring in the following manner:

(I) R = OC₂H₅, (II) R = CH₃, (III) R = ClCH₂.
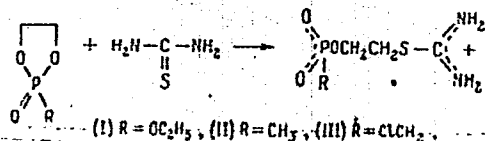
The R exerts a significant influence on the ease of alkylation, in the order ClCH₂ > OC₂H₅ > CH₃. 4-Methyl-1,3,2-dioxaphospholanes and 2-(formamidentio)-ethyl esters of phosphorous acid react with TCA in an analagous manner. Seven compounds were prepared by TCA reactions. These were characterized by elemental composition and IR, UV, and NMR spectra.

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USSR   UDC 691.327:620.17

VAYNSHTOK, I. S., SHKOL'NIK, I. E., MIZROKHL, Yu. N., BEREZNITSKIY, L. V.,
Candidates of Technical Sciences, and TSINTSKILADZE, D. M., Engineer

"Something New in the Technique of Strength Determination of Concrete by
the Ultrasonic Pulse Method"

Abstract: The All-Union Scientific Research Institute of Industrial Tech-
nology of Precast Reinforced Concrete Structural Parts and Products conducted
investigations as an attempt to develop a physically well-founded method of
determining the strength of concrete in products, structures, and buildings,
with the use of a minimum quantity of calibration samples. The theoretical
and experimental data discussed here can be used to simplify the factory
control of concrete strength and to confirm the accuracy of the authors'
computed relation between the strength, the propagation rate of ultrasonic
pulses, and structural defects of concrete of the controlled composition.
By the here-described ultrasonic device, which provides a computed time
reading of the propagation of oscillations, the strength of concrete can
also be determined in cases where a calibration curve can not be plotted on
the base of a notable number of samples. Test results by the new method
are presented. Two illustrations, three tables, three bibliographic ref-
erences.
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1/1

TITLE--EXTRACTION AND PHOTOMETRIC DETERMINATION OF ZINC IN ERYTHROCYTES
-U-

AUTHOR-(03)-KISH, P.P., ZIMOMRYA, I.I., MIZUN, P.G.

COUNTRY OF INFO--USSR

SOURCE--LAB. DELO 1970, (3), 155-7

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--PHOTOMETRIC ANALYSIS, ZINC, ERYTHROCYTE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3005/0429   STEP NO--UR/9099/70/000/003/0155/0157

CIRC ACCESSION NO--AP0132654
                          UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0132654
ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT. THE METHOD IS BASED ON THE
REACTION OF (ZNCNS SUB4)PRIME2 WITH I AT PH 3.5-8.0.   THE BLUE COMPLEX
FORMED WAS EXTD. WITH C SUB6 H SUB6-BU SUB3 PO SUB4 (28:1) AND THE
ABSORBANCE DETD. AT 610 MMU. THE REAGENT IS STABLE IN THE PRESENCE OF
ACIDS AND ITS WATER SOLN. CAN BE STORED FOR A LONGER TIME. BY USING I,
ZN CAN BE DETD. DIRECTLY IN ERYTHROCYTES IN THE PRESENCE OF FE, MN, CO,
NI, CU, CD, HG, AND CR; PRELIMINARY SEPN. IS NOT REQUIRED.
FACILITY: UZHGOROD. UNIV., UZHGOROD, USSR.

UNCLASSIFIED

USSR   UDC 662.215.2

ZAKHAROV, S. D., LIKHOV, G. M., MIZYAKIN, S. D., Moscow

"Determination of Dynamic Compressibility of Soil on the Basis of Parameters of Flat Explosive Waves"

Abstract: The dynamic compressibility of soil has been determined on the basis of experimental values of the parameters of flat, cylindrical and spherical explosive waves at stresses generally not exceeding 80-100, some-times 250 kg/cm^2. This article presents results of experimental studies of flat waves at stresses of up to 1,000 kg/cm^2. These data are used to construct a stress-strain diagram corresponding to shock compression at the leading edge of the wave. The degree of compacting of the soil is determined. It is demonstrated that deformations continue to increase behind the leading edge of the wave. The residual deformations are greater than those that occur at the leading edge. This indicates a significant influence of viscous and plastic properties of soils on the wave process.

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USSR

USSR
Diagnosis

MIZYAKINA, YE. A., and KUDRYAKOVA, L. V., Chair of Infectious Diseases, Alma-Ata Institute for Advanced Training of Physicians

"Notes on Botulism for the Propagandist"

Alma-Ata, Zdravookhraneniye Kazakhstana, No 8, 1972, p 81

Abstract: Although the clinical aspects of botulism are well known, many general practitioners are not familiar with them and make wrong diagnoses, because they seldom encounter this disease. Recently, however, the occurrence of botulism has increased in Kazakhstan, and almost all cases are caused by consumption of contaminated food of domestic production, mainly mushrooms, vegetables, fish, and ham. For this reason, the case history of 18 persons who consumed home-smoked fish for dinner is given. Nine of them developed botulism: two in the mild form, three in the moderate form, two in the severe form, and two with lethal outcome. The onset of the disease, the initial wrong diagnosis, subsequent hospitalization, clinical manifestations of enteric, neural, and general disorders, and the treatment, including chemotherapy, are described.

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USSR   UDC: 550.837

VAKUL'SKIY, A. A., KAMENETSKIY, F. M., LABZHINSKIY, S. I., LUTSYSHIN, A. S.,
MIZYUK, L. Ya., TIMOFEYEV, V. M., YAKUBOVSKIY, Yu. V., Institute of Physical
Mechanics, Academy of Sciences of the Ukrainian SSR

"A Device for Aerogeoelectric Prospecting"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki,
No 9, Mar 72, Author's Certificate No 331356, Division G, filed 12 May 69,
published 7 Mar 72, p 144

Translation: This Author's Certificate introduces a device for aerogeo-
electric prospecting by the method of transient processes. The device con-
sists of a current pulse generator which contains a source of direct current,
a master multivibrator, a frequency divider, a power amplifier, a current
commutator and an oscillator tank circuit; and a meter which contains a
receiving tank circuit, a preamplifier, a gating module, an accumulator,
a DC amplifier, a registration unit, and a circuit for control and synchro-
nization of the gating module. As a distinguishing feature of the device,
interference suppression is improved, the measurement error is reduced and
the stability of compensation of transient processes caused by the conduc-

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KUL'SKIY, A. A. et al., USSR Author's Certificate No 331356

...ive fuselage of the aircraft is increased by connecting coincidence gates in the current pulse generator between the frequency divider and power amplifier. Some inputs of the coincidence gates are connected to the output of the master multivibrator, and the other inputs are connected to the outputs of the frequency divider. A band filter is connected in the meter between the preamplifier and the gating module, and a secondary gating block is connected between the pulse amplifier and the DC amplifier. The secondary gating block is connected to the control and synchronization circuit, and is made in the form of parallel-connected compensation and measurement strobe pulse multivibrators which are connected through a broad strobe pulse shaping multivibrator to the primary gating module. Multivibrators for delay and shaping of narrow strobe pulses [are connected] to coincidence gates with some inputs connected to the outputs of the oscillator frequency divider, while the other inputs are connected to the multivibrator for shaping narrow strobe pulses, and the outputs of these coincidence gates are connected to the secondary gating block.

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USSR
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UDC 550.837.73

KAMENETSKIY, F. M., YAKUBOVSKIY, YU. V., MIZYUK, L. YA., VAKUL'SKIY, A. A.,
TIMOFEYEV, V. M., MAKAGONOV, P. P., LUTSYSHIN, A. S., BOYKO, V. P.

"Device for Inductive Aeroelectric Exploration by the Transient Process Method"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 16,
8 May 70, p 61, Patent No 270123, Filed 19 Apr 65

Translation: 1. This Author's Certificate introduces a device for inductive
aeroelectric exploration by the transient process method. The device comprises
a pulse generator, a generator circuit, a receiving element, a control unit,
amplifiers, commutators, storage elements, and a recording unit. It is dis-
tinguished by the fact that in order to improve the noiseproofness of transient
process measurements in flight, the generator circuit is executed in the form
of a system made up of the basic generator circuit placed between the aircraft
and the receiving element at equal distances from both and two auxiliary cir-
cuits arranged one directly on the hull of the aircraft and the other, on the
case of the receiving element.

     2. A second device like item 1 is introduced, but it is distinguished
by the fact that in order to obtain the required power in the basic generator
circuit directly from the low-voltage on-board network and also to increase
the steepness of the pulse fronts, the basic generator circuit is executed in
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KAMENETSKIY, F. M.,et al., Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 16, 8 May 70, Patent No 270123, Filed 19 Apr 65

the form of several sections commuted by individual switches with a common control circuit.

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USSR

UDC 621.397.132:621.397.331.2

MALKIYEL', B. S., MIZYUK, M. G., KIRLAN, V. N., MISHCHUK, N. A.

"Miniature Kinescope for Color Television"

Moscow, Tekhnika kino i televideniye, No. 7, 1971, pp 68-69

Abstract: The color kinescope described in this article is meant for individual viewing or as control-room monitor. It uses a system of color division with subsequent focusing, and magnetic switching of the beam produced by a single electron gun in the tube base. A longitudinal cross section of the tube, indicating its general construction, is sketched. The image measures 60 mm along the diagonal, the angle of the electron beam deflection is 40°, and the diameter of the tube neck is 13 mm. An explanation of the tube's operation is given. Two curves are given from which the permissible ripple in the supply voltage for the tube for obtaining pure colors can be estimated. A photograph of the tube together with its basic specifications is reproduced on the inside rear cover of the journal.

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USSR

YEVREYEV, V. N., KOTLYAR, G. A., KLIMOVA, L. K., MIZYUKOVA, I. G., and
PETRUN'KIN, V. Ye., All-Union Institute of Hygiene and Toxicology of Pesticides,
Polymers, and Plastics

"A Method of Obtaining Trivalent Cobalt Compounds with Diethanolamine"

Translation: Compounds with the formula $Co[NH(C_2H_4O)_2NH(C_2H_4O) \cdot (C_2H_4OH)]$ (I)
and active as pesticides are obtained by splitting (with an alkaline agent)
binuclear complexes containing bi- and trivalent Co in the ratio of 1:1 like
$Co_2NH(C_2H_4OH)_2[NH(C_2H_4O_2]_2X$ (II) or $Co_2[NH(C_2H_4O)_2]_2X$ (III) (X = Cl). Example.
10 ml of water and 0.1 mole of an NaOH solution in 20 ml of water are added to
0.01 mole of II hydroxide. The mixture is filtered and the filtrate evaporated
over $CaCl_2$ and 10 days later I, $C_8H_{18}N_2O_4Co \cdot 9H_2O$ is isolated, yield 60%. I is
obtained with a yield of 72% by splitting $III \cdot 4H_2O$ under the same conditions.

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Pharmacology and Toxicology

USSR

UDC 615.917

KURCHATOV, G. V., LYSENKO, N. M., MIZYUKOVA, I. G., and PETRUN'KIN, V. YE.,
All-Union Scientific Research Institute of Hygiene and the Toxicology of
Pesticides, Polymers, and Plastics

"Relationship Between the Structure and the Medicinal Properties of Sulfur-
and Nitrogen-Containing Compounds"

Translation: The medicinal properties of three types of compounds -- thiols,
ethanolamines, and acyl- and alkyl-containing aminothiols -- were studied in
order to search for antidotes for heptachor poisoning. It was determined that
only the hydroxy-derivatives of acyl- and alkylaminothiols demonstrate a posi-
tive effect and they are more active than diethanolaminomethyl thioacetate.

1/1

KURCHATOV, G. V., LYSENKO, N. M., MIZYUKOVA, I. G., and PETRUN'KIN, V. Ye.

"Relationship Between the Structure and Therapeutic Activity of Sulfur- and Nitrogen-Containing Compounds"

Abstract: Mice and rats received a single intragastic injection of industrial heptachlor (71%; LD$_{50}$), after which a study was made of the antitodal and therapeutic effect of thiols (aliphatic and fatty-aromatic series and their derivatives), ethanolamines (and their derivatives), and S-acyl- and S-alkyl derivatives of α-aminothiols administered subcutaneously or perorally 20 to 30 minutes before and secondarily immediately after poisoning in doses amounting to a double equimolar excess with respect to the poison. Several sulfur-containing compounds were tentatively included among the ethanolamine derivatives (mono- and diethanolamines). A total of 33 substances were investigated. Only the hydroxy derivatives of the S-acyl-α-aminothiols possessed a marked antitodal effect. Diethanolaminomethyl thioacetate was the most active.

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1/2   012   UNCLASSIFIED   PROCESSING DATE--30OCT70
TITLE--PETROLEUMS FROM THE NIZHNE VARTOVSKOE ARCH IN WESTERN SIBERIA -U-

AUTHOR-(02)-MKHCHIYAN, M.A., ORIATSKAYA, Z.V.

COUNTRY OF INFO--USSR

SOURCE--KHIM. TEKHNOL. TOPL. MASEL 1970, 15(4), 11-13

DATE PUBLISHED--------70

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY, MATERIALS, PROPULSION AND
  FUELS
TOPIC TAGS--PETROLEUM DEPOSIT, GEOGRAPHIC LOCATION, LUBRICATING OIL,
  TECHNICAL STANDARD, DIESEL FUEL, GASOLINE, SULFUR, WAX/(U)GOST 91266
  PETROLEUM STANDARD

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3001/2084   STEP NO--UR/0065/70/015/004/0011/0013

CIRC ACCESSION NO--AP0127457
                         UNCLASSIFIED

CIRC ACCESSION NO--AP0127457
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TITLE PETROLEUM IS RELATED TO
THE 2ND CLASS (CF. GOST 912-66), CONTAINS 0.51-2.00PERCENT S AND YIELDS
GASOLINE, JET AND DIESEL FUELS WITH SMALLER THAN OR EQUAL TO 0.15, 0.25,
AND 1.0PERCENT S, RESP., 45PERCENT FRACTIONS B. SMALLER THAN OR EQUAL TO
350DEGREES, AND 18-21PERCENT BASE STOCK FOR LUBRICATING OILS WITH
VISCOSITY INDEX LARGER THAN 85 AND 1.5-3.5PERCENT PARAFFIN WAX. THE
PETROLEUMS OF THE IDFFERENT DEPOSITS WERE SIMILAR.

UNCLASSIFIED

Organ and Tissue Transplantation

USSR   UDC 612.6.054.017.4

SVET-MOLDAVSKIY, G. Ya., SHAGIYAN, G. Sh., MKHEIDZE, D. M., LITOVCHENKO, T. A.,
OZERETSKOVSKAYA, N. N., KADAGIDZE, Z. G., and CHERNYAKHOVSKAYA, I. Yu., Institute
of Experimental and Clinical Oncology, Academy of Medical Sciences USSR, Moscow
(Presented by Academician V. V. Parin)

"Inhibition of Transplantation Immunity in Mice Infected With Trichinella spiralis"

Abstract: In this study the authors attempted to get experimental support for
the theory proposed by Svet-Moldavskiy that helminths produce substances which
drastically inhibit the immunity of the host. Experiments were based on skin
transplants. It was determined that in mice infected with Trichinella spiralis,
the allogenic skin transplant survived much longer, and the detachment of necrotic
sections occurred much later than in controls.

1/1

USSR

MKHEYAN, E. YE., MASHINYAN, A. KH.

"Effect of Molybdenum and Copper on the Respiratory Process and Oxidizing Phosphorylation in the Mytochondria of the Liver of White Rats"

Translation: It is demonstrated that on internal administration of Mo in the amount of 20 and 100 mg/kg for 45 days, it causes noticeable disturbances of the respiratory tract which are exhibited in the form of intensification of respiration in the presence of adenosinediphosphoric acid and suppression of the efficiency of phosphorylation (the ADP/O factor drops). Simultaneous administration of Cu in the amount of 13 mg/kg leads to normalization of the detected disturbances which confirms the opinion of the favorable effect of Cu on the course of molybdenum toxicosis. The bibliography has 24 entries. USSR, Yerevan, Medical Institute.
1/1

"Influence of Gangliosides on Blood Circulation in the Brain"

Abstract: The effect of gangliosides on the following aspects of blood cir-
culation in the brain was investigated: changes in blood vessel tonus;
systemic arterial pressure; linear speed of blood flow through the gray
matter; intracranial blood accumulation. Tests were conducted under con-
ditions of natural and artificial respiration. Intracarotid introduction
of gangliosides was accompanied by a distinct increase in the resistance of
cerebral blood vessels, by a drop in the systemic pressure, and by a decrease
in the amplitude and frequency of respiratory movements. The degree of re-
action produced by gangliosides was directly dependent on the size of the
doses. The smaller the dose, the less the strength and duration of the
effect. Intravenous introduction of gangliosides led to a marked reduction
in blood supply to the cortex, a marked and quick drop in the blood flow
rate, a lowering of arterial pressure, a short suspension of respiration,
and a distinct decrease in intercranial blood accumulation. In conclusion,

1/2

USSR

UDC 666.112.5

YARLOVA, K. S., MINASYAN, G. S., ABOVYAN, M. M. and MKRTCHYAN, L. O.,
Byurakan Optico-Mechanical Laboratory, Academy of Sciences, Armenian SSR,
and Scientific Research Institute of Rocks and Silicates

"Glass"

USSR Author's Certificate No 366155, Filed 9 Nov 70, Published 16 Jan 73
(from Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 7,
Mar(a) 73, Claim No 1490339/29-33)

Translation: A glass including SiO_2, Al_2O_3, Fe_2O_3, CaO, MgO and TiO_2, dis-
tinguished by the fact that in order to increase the coefficient of reflection
and decrease the coefficient of thermal expansion it contains the above com-
ponents in the following quantities, weight %: SiO_2 50-60, Al_2O_3 18.2-19.2,
Fe_2O_3 10.9, CaO 1.04-1.05, MgO 5-7.2, TiO_2 1.6-1.7 and F 3-3.5.

1/1

USSR

MKHEYAN, V. YA., PAREYSHVILI, YE. A., and KARAGEZYAN, E. G., Radiobiology
Department, Ministry of Health, Armenian SSR

"Changes Originating in Peripheral Blood and Spleen of Rats Under the Influence
of Ruby Laser Rays on the Spleen"

Abstract: Experiments were conducted to study the quantitative and morpholo-
gical changes in peripheral blood as well as morphological changes in the
spleen under the direct influence of laser rays on hemopoietic organs (spleen).
The spleen of 40 white rats were submitted to a single irradiation by a ruby
laser (wavelength-6943Å, energy-3J/pulse, diameter of pencil ray-7mm, pulse
duration-0.5 sec). Twenty control rats underwent surgery without irradiation.
Twenty-five rats were examined for peripheral blood changes, 35 for morpholo-
gical spleen changes. After an initial reference sample, blood samples were
taken 1 hour, 1, 7, 15, and 30 days after irradiation. Five-micron micro-
scopic sections were made of spleen samples. No visual changes in erythrocytes
or hemoglobin were observed. All types of blood cells were briefly diminished
1 hour after irradiation, especially eosinophils, evidently connected with
marked destructive changes of the spleen and perhaps the nerve-reflex factor.

1/2

USSR

Number of leukocytes, absolute quantity of lymphocytes, monocytes, and baso-
phils increased beginning with the 1er day after irradiation, reaching a
maximum on the 7th. On the 7th, 15th, and 30th days an increase in the
quantity of all blood cells was observed, especially lymphocytes, corres-
ponding to hemopoiesis evidenced by an increased quantity of lymph follicles
and cell elements of red pulp. Hemopoiesis activity was also influenced by
the destruction of blood cells in the area of direct radiation. An increase
of young forms of lymphocytes (lymphopoiesis) in the spleen and mitosis of
marrow cells was observed. According to the results of the experiment,
laser rays a have a stimulating effect on the hemopoietic organs and peripheral
blood beginning with the first day after irradiation.

2/2

MKHEIDZE, G. P.

UDC 533.9.07

ACCELERATION OF IONS BY A RELATIVISTIC ELECTRON BEAM

[Article by A. A. Plyutto, K. V. Suladze, S. M. Temchin, G. P. Mkheidze, Ye. D. Korop, B. A. Tskhadaya and I. V. Golovin; Moscow, Zhurnal Tekhniche- skoy Fiziki, Russian, Vol. 43, No. 8, 1973, signed to press 22 June 1972, pp. 1627 - 1631]

Abstract

The effect of ion acceleration by a relativistic electron beam was investigated. Protons were accelerated to 6 - 7 million electron volts for an energy of an electron beam of approximately one million electron volts. The beam composition and its energy distribution were studied. It was demonstrated that the energy of protons accelerated by electrons rises more rapidly than linearly with an increase in the accelerating voltage in the 0.3 - 1 million electron volts range.

The effect of ion acceleration in an electron beam was observed initially when obtaining nonrelativistic electron beams from a plasma emitter /1/. Protons and ions of carbon with maximum energies of 4 - 5 and 10 - 20 kev were recorded in the following experiments for an average of 200 - 300 kev electron energy /2/. A linear rise in the energy of ions with an in- crease in the energy of electrons was observed in the range of 10 - 200 kilo- volt accelerating voltages under optimal conditions for ion acceleration. This opened up the possibility for creating an electron jet ion accelerator at 10 - 100 Mev using 1 - 2 Mev relativistic electron beams. Some investi- gations in this direction were conducted using high current electron reso- tor accelerators.

Arrangement of Experiment

Ion acceleration by means of electrons was done by using a variable accelerating voltage oscillating with a frequency of 6.3 megahz and an initial amplitude of 0.2 - 1 megavolts applied to the accelerating gap. The high

- 1 -

[I - USSR - L]

MKHEYDZE, D.M.

Virology

SOME OF THE RESULTS OF A STUDY OF DERMAL HETEROGENIZATION INDUCED BY A
LATENT VIRUS OF C57B1/6J MICE

[Article by A. L. Liozner, N. Ya. Svet-Moldavsky, D.M. Mkheidze, P.P. Sochilov;
Moscow, Voprosy Virusologii;
[A. L. Liozner, N. Ya. Svet-Moldavsky, Moscow Scientific Research Institute of
Viral Preparations, USSR Ministry of Health; Institute of Experimental and
Clinical Oncology USSR AMS [Academy of Medical Sciences]; Institute of Sani-
tation and Hygiene, Georgian Ministry of Health; Institute of Epidemiology and
Microbiology imeni N.F. Gamaleya, USSR AMS; Moscow, Vestnik Akademii Meditsin-
skikh Nauk SSSR, Russian, No 7, 1971, pp 74-81]

In 1965, in our experiments with sarcoma K-237, induced in inbred
C57B1/6J mice with the chemical carcinogen DMBA, we discovered the unusual
phenomenon of tissular incompatibility. Skin transplants from mice with
tumors to recipients of the same line consistently underwent rejection just
as is the case with skin transplants of allogenic origin from another inbred
line of mice (G.Ya. Svet-Moldavsky et al., 1967a, b, c). Further investiga-
tion of this phenomenon, which was named "skin heterogenization," established
that its onset is linked with the effect of a distinctive virus associated with
sarcoma K-237 (G.Ya. Svet-Moldavsky et al., 1968a, b). These investigations
define two directions of research which have been developed in recent times
by a number of authors in many laboratories the world over: 1) investigation
of appearance of new antigens in normal tissues of tumor carriers and, as a
more general question, investigation of antigen exchange between cell systems
in the organism and in vitro; 2) investigation of viral heterogenization of
normal cells and the role of such phenomena in pathology, in particular with
reference to immunopathological states. Thus, investigation of this problem
is timely both for general immunology and for such directions in it as
transplantation and antitumor immunity. In this report we should like to
sum up some of the results of investigation of skin heterogenization on the
example of the experimental model we have described, and to discuss the
present status of the problem as a whole. Like any new problem, this one
presents a number of debatable aspects which are also going to be discussed.

Material and methods. The experiments were conducted on inbred C57B1/6J,
BA1B/C, C3H, C3HA, T6T6 mice which were obtained from the Stolbovaya
Nursery of the USSR AMS. Hybrids from crosses between C57B1/6J and BA1B/c
mice were obtained in our animal shelter. To induce tumors, we gave the

- 109 -

mice intramuscular injections of 7,12-dimethylbenzanthracene (DMBA) in sterile oil solution, in a dosage of 0.5 mg. Tumors developed at the site of injection of the carcinogen within 3-5 months. They were transferred to syngenic mice by means of subcutaneous implantation of small pieces. The method of preparing virus-containing acellular tumor extracts and of testing them on mice was described previously (G.Ya. Svet-Moldavskiy et al., 1968a, b, 1970).

Skin transplants were transferred following a slight modification of the method of Billingham and Medawar (1951). Body skin transplants, including all layers, 3.5x2 or 2x2 cm in size were applied to recipients by means of an adhesive strip along the margins of the transplant and site. For this purpose we used a special preparation of BF-6 adhesive (adhesive for microtraumas). The first evaluation of the transplanted skin was made on the 5th-6th day after transplantation; primary acceptance of any type of transplant normally occurred within this time. At this time we rejected all recipients showing signs of injury or infection of the transplants. The percentage of such rejects ranged from zero to ten in the different experiments. In order to ascertain the time of transplant rejection, they were examined daily. The final criterion of acceptance or rejection was the presence or absence of hair growth, which was in the opposite direction from growth on the recipient's back because the graft was twisted at the time of transplantation.

Chief phenomenon and etiological agent. The reaction of rejection of skin grafted to syngenic C57BL/6J recipients from carriers of sarcoma K-237 was identical to the reaction of rejection of allogenic transplants (of skin from BALB/c mice to C57BL/6J recipients). Both, as well as normal syngenic transplants, showed vascularization by the 6th day and were accepted. Development of rejection occurred between the 8th and 11th experimental day (Table 1). Histological examination of the transplants also revealed complete similarity of rejection of syngenic heterogenized and allogenic skin. In both instances dilatation of vessels and arrested circulation. There was mixed cellular infiltration of the transplants, and this is quite typical precisely for the rejection reaction in mice (Brent, 1958). In addition to mononuclears, there was a considerable number of polymorphonuclear leukocytes in the transplant. There were also marked signs of activation of connective tissue in the transplant dermis and adhesion layer. The agent "responsible" for development of heterogenization of the skin presented properties that were typical for viruses. It could be separated from tumor cells, it remained in acellular extracts of the tumor, ultracentrifugates, and ultrafiltrates (for more details see G.Ya. Svet-Moldavskiy et al., 1970). Table 2 gives the summary data on the heterogenizing effect of the tumor and of extracts thereof. As seen in Table 2, in almost 1,000 cases of transplantation, there was heterogenization of the skin by the tumor or virus-containing extract, whereas in the control (provided accurate consideration of primary healing of the grafts was made) no rejections were observed. It has been shown (D.M. Mkheidze et al., 1970; G.Ya. Svet-Moldavskiy et al., 1970) that skin heterogenization occurs both after infection with tumor extract and after transplantation of heterogenized skin. In the latter event, the phenomenon developed after each successive transplantation for 15 passages, starting in 1966. Thus, the viral nature of the agent is confirmed by the fact that it can be separated from cells, it

MKHITAROV, R. A., Acoustic Institute, USSR Academy of Sciences

"The Radiation of Sound by a Rectangular Plate Oscillating Under the Action of Pressure Pulsations in a Turbulent Boundary Layer"

Abstract: Theoretical consideration is given to the radiation of sound in the Frauenhofer zone of an elastic homogeneous rectangular plate, hinge-supported along the edges, which oscillates under the action of pressure pulsations in a turbulent boundary layer. The scope of the discussion covers a wide range of relationships among the dimensions of the plate, the wavelength in liquid, and the correlation radius of the pulsation pressure, with account taken of the interrelationship among various vibration modes of the plate. The square root of the sonic pressure of the plate is found, and an analysis is made of its relationship to the frequency, the direction of the radiation, and the character-istics of the wall pressure pulsations. The characteristics of directivity and the spectral density of radiation for a duraluminum plate 22 x 18 x 0.2 cm, calculated by means of a digital electronic computer, are presented. 3 figures. 4 references.
1/1

USSR

UDC 538.4

MKHITARYAN, A. M., BOYARSKIY, G. N., UDARTSEV, YE. P., GOLEGO, A. N.

"Study of an Electromagnetic Jet Along a Wall"

Sb. nauch. tr. Kiev. in-t inzh. grazhd. aviatsii (Collection of Scientific Works. Kiev Institute of Civilian Aviation Engineers), 1970, No. 6, pp 92-98 (from RZh-Mekhanika, No 9, Sep 71, Abstract No 9B44)

Translation: The electrohydrodynamic control of flow in a boundary layer on a plane nonconducting plate is investigated experimentally with the aid of corona discharge between the corona electrode and the system of electrode-collectors located on the surface. The effect of the frequency f of the controlling electric field and electrode switching diagrams on the dynamic flow characteristics at different cross sections of the boundary layer is studied. The considerable increase in the rate in the region of the wall of propagation of the electrohydrodynamic jet is demonstrated. It is shown that the rise in f leads to an increase in the maximum "evoked" velocity and to a more uniform distribution of it along the section of interaction with the electric field. There is established the possibility of regulating the flow by changing the distribution of potential

1/2

- 3 -

USSR

MKHITARYAN, A. M., et al, Sb. nauch. tr. Kiev. in-t inzh. grazhd. aviatsii,
1970, No. 6, pp 92-98

on the electrode-collectors. It is found that the relative increment of the
pulse in the boundary layer ceases to rise with an increase in the electrogas-
dynamic Euler number, beginning with a certain value. A. B. Vatazhin.

2/2

1/2   017   UNCLASSIFIED   PROCESSING DATE--23OCT70
TITLE--LINEAR PERIODIC PROBLEM OF A SLOPE WIND OVER A THERMALLY
  INHOMOGENEOUS SLOPING SURFACE -U-
AUTHOR-(02)-MKHITARYAN, A.M., ARUTIUNYAN, ZH.G.

COUNTRY OF INFO--USSR

SOURCE--AKADEMIIA NAUK ARMIANSKOI SSR, DOKLADY, VOL. 50, NO. 1, 1970, P.
  11-19
DATE PUBLISHED-------70

SUBJECT AREAS--ATMOSPHERIC SCIENCES

TOPIC TAGS--ATMOSPHERIC MOTION, ATMOSPHERIC WIND, DIFFERENTIAL EQUATION,
  ATMOSPHERIC TEMPERATURE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1998/0711   STEP NO--UR/0252/70/050/001/0011/0019

CIRC ACCESSION NO--AT0121370
                        UNCLASSIFIED

2/2   017
CIRC ACCESSION NO--AT0121370
ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT. ANALYSIS OF THE MOTION OF AIR ON A
NONUNIFORMLY HEATED PLANE SLOPE FORMING A GIVEN ANGLE WITH THE
HORIZONTAL PLANE. IT IS ASSUMED THAT THE TEMPERATURE OF THE SLOPING
SURFACE IS A PERIODIC FUNCTION OF TIME AND DECREASES LINEARLY UP THE
SLOPE. A SYSTEM OF DIFFERENTIAL EQUATIONS IS DERIVED TO DESCRIBE THE
MOTION OF AIR ON A SLOPE. THE WIND VELOCITY COMPONENTS ACTING ALONG A
SLOPE AND NORMALLY TO ITS SURFACE AND ALSO THE TEMPERATURE VARIATIONS AT
VARIOUS DISTANCES FROM THE GROUND AT DIFFERENT MOMENTS OF TIME ARE
CALCULATED FROM THESE EQUATIONS FOR SIX DIFFERENT POINTS OF A SLOPING
SURFACE. AN ANALYSIS SHOWS THAT THE VELOCITY OF A VALLEY WIND CAN REACH
A MAXIMUM OF 12-14 M-SEC.   FACILITY: ZAKAVKAZSKII
NAUCHNO-ISSLEDOVATEL'SKII GIDROMETEOROLOGICHESKII INSTITUT, YEREVAN,
ARMENIAN SSR.

UNCLASSIFIED   PROCESSING DATE--13NOV70

1/3   065
TITLE--AERODYNAMICS -U-

AUTHOR--MKHITARYAN, A.M.

COUNTRY OF INFO--USSR

SOURCE--AERODINAMIKA MOSCOW, MASHINOSTROYENIYE, 1970, 427 PP

DATE PUBLISHED-------70

SUBJECT AREAS--AERONAUTICS, PHYSICS

TOPIC TAGS--AIR PASSENGER TRANSPORT, FLUID DYNAMICS, GAS FLOW,
PERTURBATION, BOUNDARY LAYER THEORY, AIRCRAFT WING, FLOW PROFILE,
AERODYNAMIC CHARACTERISTIC, AIRCRAFT PROPELLER, HELICOPTER ROTOR,
AERODYNAMIC DESIGN, MONOGRAPH

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3003/1240   STEP NO--UR/0000/70/000/000/0001/0427

CIRC ACCESSION NO--AM0130244
                   UNCLASSIFIED

2/3   .065
CIRC ACCESSION NO--AM0130244
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PREFACE 3. INTRODUCTION 5.
CHAPTER I BASIC PHYSICAL PROPERTIES OF LIQUIDS AND GASES, GROUND
ATMOSPHERE 15. II KINEMATICS OF A LIQUID MEDIUM 36. III KINEMATICS
OF POTENTIAL FLOWS 50. IV EDDY MOTION 65. V DYNAMICS OF A LIQUID
77. VI THEORETICAL PRINCIPLES OF POTENTIAL LIQUID FLOW ABOUT BODIES
87. VII ELEMENTS OF THE SIMILITUDE THEORY 102. VIII ELEMENTS OF
EXPERIMENTAL AERODYNAMICS 116. IX ISENTROPIC GAS FLOWS 132. X
SMALL DISTRUBANCES AND PRESSURE JUMPS IN GLAS FLOW 141. XI
THEORETICAL PRINCIPLES OF THE BOUNDARY LAYER 175. XII WING PROFILES
AND THEIR AERODYNAMIC CHARACTERISTICS 197. XIII AERODYNAMIC
COEFFICIENTS OF A PROFILE IN SUBSONIC FLOW 215. XIV WING PROFILE IN
TRANSONIC FLOW 229. XV WING PROFILE IN SUPERSONIC FLOW 240. XVI
THEORETICAL PRINCIPLES OF A FINITE SPAN WING IN INCOMPRESSIBLE FLOW
256. XVII SWEPT WINGS IN SUBSONIC FLOW 287. XVIII MAXIMUM
COEFFICIENT OF LIFT. MECHANIZATION OF THE WING 298. XIX AERODYNAMIC
COEFFICIENT OF A WING AT SUBSONIC AND TRANSONIC SPEEDS 317. XX
AERODYNAMIC OF A WING IN SUPERSONIC FLOW 328. XXI AERODYNAMIC
CHARACTERISTICS OF BODIES OF REVOLUTION 342. XXII AERODYNAMIC
CHARACTERISTICS OF THE TAIL UNIT AND CONTROLS 354. XXIII AERODYNAMIC
CHARACTERISTICS OF AN AIRPLANE 362. XXIV CHARACTERISTICS OF
AERODYNAMICS IN FLIGHTS AT HYPERSONIC SPEEDS AND HIGH ALTITUDES 372.
XXV PROPELLERS 387. XXVI CHARACTERISTICS OF AERODYNAMICS OF THE
HELICOPTER ROTOR 410. BIBLIOGRAPHY 421. THE BOOK DEALS WITH
PRINCIPLES OF AERODYNAMICS IN APPLICATION TO PASSENGER AIRPLANES.

ABSTRACT/EXTRACT--THE TEXT BOOK WAS WRITTEN FOR STUDENTS OF CIVIL AVIATION
  COLLEGES. IT CAN BE RECOMMENDED ALSO TO A WIDE CIRCLE OF ENGINEERS OF
  CIVIL AVIATION AND THE AIRCRAFT INDUSTRY.

UNCLASSIFIED

Abstract: A new method is proposed in this article for solving space contact problems of a semi-plane reinforced by elastic stiffeners of small cross-section. The cases of an infinite, semi-infinite and finite length stiffeners are analyzed. With the proposed method the solution of these problems amounts to the solution of integral-differential equations with full elliptical integrals of first and second kind and with defined boundary conditions. An effective method of solving these equations is proposed.

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USSR   UDC 669.162.26.012.1-52:681.3

KHROMOV, V. A., and MKRTCHAN, L. S.

"Method of Regulation of the Thermal State of the Blast Furnace"

Proizvodstvo Chernykh Metallov [Production of Ferrous Metals--Collection of Works], No 75, Metallurgiya Press, 1970, pp 21-28

Translation: A method has been developed at the Central Scientific Research Institute for Ferrous Metallurgy for calculation of the ore charge necessary for maintenance of the thermal state of a blast furnace at a fixed level. This is done using the data of the thermal balance of the melt, calculated per kilogram of carbon contained in the dry top gas. Investigations have established that the use of the algorithm allows adjustment of the thermal state of the blast furnace process to be performed in a timely manner using the most economic means-- changing of the ore charge.

     Regulation of the thermal mode of a blast furnace using this algorithm and the VNIIEM-1 computer has been performed at the Azovstal' Plant during four periods with a total duration of 63 days; a decrease in the consumption of coke by 2.5-2.8% and an increase in productivity by 2.8% were achieved. 1 biblio. ref.

1/1   - 22 -

USSR   UDC 669.162.26.012.1-52:681.3

KHROMOV, V. A., and MKRTCHAN, L. S.

"Method of Regulation of the Thermal State of the Blast Furnace"

Proizvodstvo Chernykh Metallov [Production of Ferrous Metals--Collection of
Works], No 75, Metallurgiya Press, 1970, pp 21-28

Translation: A method has been developed at the Central Scientific Research
Institute for Ferrous Metallurgy for calculation of the ore charge necessary for
maintenance of the thermal state of a blast furnace at a fixed level. This is
done using the data of the thermal balance of the melt, calculated per kilogram
of carbon contained in the dry top gas. Investigations have established that the
use of the algorithm allows adjustment of the thermal state of the blast furnace
process to be performed in a timely manner using the most economic means--
changing of the ore charge.
     Regulation of the thermal mode of a blast furnace using this algorithm and
the VNIIEM-1 computer has been performed at the Azovstal' Plant during four
periods with a total duration of 63 days; a decrease in the consumption of coke
by 2.5-2.8% and an increase in productivity by 2.8% were achieved. 1 biblio. ref.

1/1

MKRTCHIAN, G.G.

LA-TR-73-36

AEC/LA /TR-73-36 From the Russian

(H)

MEASUREMENT OF THE PION AND NUCLEON FORMFACTORS AT TIME-LIKE TRANSFERRED FOUR-MOMENTUM VALUES OF $k^2 = 1.7r^2$, $2.2r^2$ and $2.9r^2$.

by

S.P. Berezhnev, A.V. Dem'yanov, A.V. Kulikov, A.V. Kaplsov, V.P. Kurochkin, G.G. Mkrtchian, L.L. Nemenov, Zh.P. Pustyl'nik, G.I. Salraov, A.C. Fedunov, D.M. Khazins

UNCLASSIFIED   PROCESSING DATE---30OCT70

1/3   016
TITLE--OPTICAL AND MOESSBAUER SPECTRA OF IRON IN TOURMALINES -U-

AUTHOR-(05)-MARFUNIN, A.S., MKRTCHYAN, A.R., NADZHARYAN, G.N., NYUSSIK,
    YA.M., PLATONOV, A.N.
COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. GEOL. 1970, (2), 146-50

DATE PUBLISHED------70

SUBJECT AREAS--CHEMISTRY, EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--ABSORPTION BAND SPECTRUM, IRON, ALUMINUM SILICATE MINERAL,
    CRYSTAL, MOSSBAUER SPECTRUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/1541   STEP NO--UR/0011/70/000/002/0146/0150

CIRC ACCESSION NO--AP0125168
                          UNCLASSIFIED

CIRC ACCESSION NO--AP0125168
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TWO ABSORPTION BANDS OF VARIOUS
INTENSITY IN THE VISIBLE (13,000-15,000 CM PRIME NEGATIVE1) AND IR
(8500-9500 CM PRIME NEGATIVE1) REGIONS WERE OBSD. IN GREEN TOURMALINE
CRYSTALS. THE OPTICAL ABSORPTION SPECTRA WERE INTERPRETED BY ASSUMING
THAT IONS OF FE PRIME2 POSITIVE ARE SITUATED MOSTLY IN MG OCTAHEDRONS
WITH LOCAL SYMMETRY OF APPROX. D SUB4H. MEANINGFUL DIFFERENCES WERE
OBSD. IN POLARIZED SPECTRA OF BLACK TOURMALINES.   THE SPECTRA ALONG
OMEGA (ORDINARY RAY) WERE CHARACTERIZED BY A WIDE ABSORPTION BAND AT
SIMILAR TO 12,000 CM PRIME NEGATIVE1 WHEREAS SPECTRA ALONG EPSILON
(EXTRAORDINARY RAY) WERE SIMILAR TO ABSORPTION SPECTRA OF GREEN
TOURMALINES. IN ADDN. A DIFFUSE BAND AT 18,000 CM PRIME NEGATIVE1 WAS
OBSD. IN SPECTRA OF THE BLACK CRYSTALS. THE ABSORPTION BAND AT SIMILAR
TO 12,000 CM PRIME NEGATIVE1 IS RELATED TO THE PRIME5 A SUB1G YIELDS
PRIME5 D BUBG TRANSITION. THE ONLY ALLOWED ONE FOR FE PRIME2 POSITIVE
IN A TRIGONAL FIELD. THIS INDICATED THAT A PART OF FE PRIME2 POSITIVE
IN THE HIGH FE BLACK TOURMALINES ENTERS INTO THE AL,OCTAHEDRONS WITH
LOCAL SYMMETRY OF SIMILAR TO C SUB3V. THE MG,OCTOHEDRONS ARE THE OTHER
POSSIBLE POSITIONS OF FE IN BLACK TOURMALINES AS INDICATED BY THE
SIMILAR CHARACTER OF THE OPTICAL SPECTRA ALONG EPSILON IN BLACK AND
GREEN CRYSTALS. MOESSBAUER SPECTRA OF PRIME57 FE IN TOURMALINES
INDICATED THAT FE PRIME2 POSITIVE OCCUPY IN BLACK TOURMALINES 2
NONEQUIV. OCTAHEDRON POSITIONS DIFFERING NOTICEABLY FROM EACH OTHER IN
PARAMETERS OF MOESSBAUER SPECTRA. BOTH POSITIONS ARE SIMILAR TO THOSE
OF FE PRIME2 POSITIVE IN GREEN TOURMALINES.

UNCLASSIFIED

CIRC ACCESSION NO--AP0125168
ABSTRACT/EXTRACT--COMPARISON OF THE DATA ON OPTICAL AND MOESSBAUER
  SPECTRA OF NATURAL TOURMALINES SHOWS THAT MOST OF THE FE IN GREEN
  TOURMALINES IN IN A SINGLE OCTAHEDRAL POSITION WITH TETRAGONAL
  DISTORTION (MG,OCTAHEDRONS). FE IS PRESENT IN BLACK TOURMALINES IN 2
  OCTAHEDRAL POSITIONS WITH TETRAGONAL (MG,OCRAHEDRONS) AND TRIGONAL
  DISTORTIONS (AL,OCTAHEDRONS).   THE AMT. OF FE IN AL,OCTAHEDRONS OF
  BLACK TOURMALINES IS MUCH HIGHER THAN IN THE GREEN VARIETIES. THIS
  EXPLAINS THE DIFFERENCES IN THE OPTICAL ABSORPTION SPECTRA OF
  DIFFERENTLY COLORED CRYSTALS.   FACILITY: INST. GEOL. RUD.
  MESTOROZH., PETOGR., MINER. GEOKHIM., MOSCOW, USSR.

UNCLASSIFIED

TITLE--SEMISYNTHETIC PENICILLINS. III. METHOXY AND
   DIALKOXYPHENYLBENZYLPENICILLINS -U-
AUTHOR-(05)-MNDZHOYAN, A.L., TSINKER, M.G., MKRTCHYAN, E.S., TERZAKHARYAN,
   YU.Z., OGANYAN, SH.G.
COUNTRY OF INFO--USSR

SOURCE--KHIM.-FARM. ZH. 1970, 4(3), 5-10

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--PENICILLIN, BENZENE DERIVATIVE, CHLORIDE, BACTERICIDE,
   MOLECULAR STRUCTURE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/1357   STEP NO--UR/0450/70/004/003/0005/0010

CIRC ACCESSION NO--AP0125005
                            UNCLASSIFIED

CIRC ACCESSION NO--AP0125005
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MONO AND DISUBSTITUTED BENZOYL
CHLORIDES (0.02 MOLE) WERE TREATED WITH 0.02 MOLE 6,AMINOPENICILLANIC
ACID (I) TO YIELD 10 II (R PRIME1 EQUALS H OR O, M, OR P-OME; R PRIME2
EQUALS H, OR P-ALKOXY; N EQUALS O). CONDENSATION OF I WITH MONO AND
DISUBSTITUTED PHENACYL CHLORIDES GAVE 9 II (R PRIME1 EQUALS O, M, OR
P-MEO; R PRIME2 EQUALS H OR P-ALKOXY; N EQUALS 1). AN ANTIBACTERIAL
ACTIVITY SPECTRUM OF II IS GIVEN.   FACILITY: INST. TONK. ORG.
KHIM., EREVAN, USSR.

UNCLASSIFIED

Foundry

USSR   UDC 669.162.26:519.28

REBEKO, A. F., and MKRTCHAN, L. S.

"Dynamic Characteristics of the Blast Furnace Process"

"Proizvodstvo Chernykh Metallov (Production of Ferrous Metals - Collection of Works) No 75, Metallurgiya Press, 1970, pp 3-8

Translation: Values of dynamic characteristics of the blast furnace process used in certain control channels of the thermal state and course of the furnace process are presented.

The dynamic characteristics were calculated using statistical methods, while the characteristics of the ore charge-silicon channel were determined on the basis of startup curves and using calculations according to a simplified mathematical medel.

The results produced can be used to regulate the blast furnace process. 4 figures; 1 table; 7 biblio. refs.

1/1

USSR

UDC 539.12.01:539.124

MKRTCHYAN, M. M., Department of Theoretical Physics, Moscow State University

"Radiation of a Particle in a Strong Magnetic Field at Low Energy Levels"

Abstract: It has been shown that besides the area of high electron energies, quantum effects are significant also in the case of small values of the main quantum number. Results have been obtained for the emission of an electron in superstrong fields. Here it turns out that the intensity of the emitted light not only does not coincide with the results of classical theory but also differs in essence from the ultraquantum case of an electron. In the present article formulas have been obtained for the total strength and polarization of the emission of an electron and of a spinless particle which moves in a superstrong magnetic field and is in the second excited state. When the problem is solved on the basis of the Dirac equation, in the case of transitions of a particle from the second excited state to lower levels, the polarization of the emitted light has qualitatively new values. If an analogous problem were solved, instead, on the basis of the Pauli equation, there would be obtained in explicit form the addition of the magnetic moment to the radiation when the electron moves in a strong magnetic field.
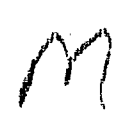1/1

USSR

MKRTCHYAN, N. A.

"Some Problems of the Use of the Principle of Algorithmization in the
Study of the Russian Language in the National School (Based on Studies
of Gender Category of Russian Nouns in the Armenian School)"

Vopr. algoritmiz. i programmir. obuch. [Problems of Algorithmization and
Programming of Learning -- Collection of Works], No 2, Moscow, Pedagogika
Press, 1973, pp 179-200 (Translated from Referativnyy Zhurnal - Kibernetika,
No 8, 1973, Abstract No 8 V742 by V. Gushchin)

Translation: Studies of the gender category in Russian are used in an
investigation of problems of the application of the principle of algorithmi-
zation. In writing teaching algorithms, particular attention is given to
determination of the specifics of the perception of Russian by students not
familiar with the language from childhood. A method is given for determina-
tion of the basic characteristics of means of expression in Russian from
this standpoint on the basis of a study of numerous examples.

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- 95 -

TITLE--REACTION OF MANGANESE SULFATE WITH SODIUM METASILICATE IN AN
   AQUEOUS SOLUTION -U-

AUTHOR-(03)-BABAYAN, G.G., VOSKANYAN, S.S., MKRTCHYAN, R.T.

COUNTRY OF INFO--USSR

SOURCE--ZH. PRIKL. KHIM. (LENINGRAD) 1970, 43(3), 491-7

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--MANGANESE COMPOUND, SULFATE, AQUEOUS SOLUTION, SODIUM
   COMPOUND, SILICATE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1996/1944   STEP NO--UR/0080/70/043/003/0491/0497

CIRC ACCESSION NO--AP0118906
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0118906   UNCLASSIFIED

PROCESSING DATE--23OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE REACTION BETWEEN MNSO SUB4 AND NA SUB2 SIO SUB3 WAS STUDIED AS A FUNCTION OF THE RATIO MN PRIME2POSITIVE -SIO SUB3 PRIME2NEGATIVE IN INTERVALS 0.05-3.0 BY THE FOLLOWING METHODS: SOLY., D., PH, ELEC. COND. OF THE SOLNS. IN THE ABOVE RANGE, 2 COMPDS. ARE FORMED, AT MN PRIME2 POSITIVE -SIO SUB3 PRIME2 NEGATIVE OF 0.05-0.7, A MN SILICATE WITH A RATIO MNO-SOO SUB2 EQUALS 0.5, AND AT MN PRIME2 POSITIVE -SIO SUB3 PRIME2 NEGATIVE RATIOS OF 0.9-3.0, A MN METASILICATE WITH A RATIO MNO-SIO SUB2 EQUALS 1.0. THERMOGRAPHIC STUDIES USING A QUARTZ BALANCE SHOWED THAT THE DEHYDRATION PROCESS OCCURS CONTINUOUSLY UP TO 30PERCENT OF H SUB2 O CONTENT WHERE ONLY A SMALL INFLECTION IS OBSD. THE DTA CURVE OF MN SILICATE HYDRATE INDICATES A STRONG ENDOTHERMIC EFFECT AT 90DEGREES AND A WEAK EXOTHERMIC EFFECT AT 575DEGREES. X RAY DATA FOR MNSIO SUB3 ARE PRESENTED. FACILITY: ERAVAN. NAUCH. ISSLED. INST. KHIM., EREVAN, USSR.

UNCLASSIFIED

COLÉEN

MKRTCHYAN, S. O.

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FPD:CYBERNETICS

29 Oct 71

UDC 611--018.8 : 51+519.95+519.92

SO: FOREIGN PRESS DIGEST
29 OCT. 1971

104. USSR

MKRTCHYAN, S. O.

"A New Interpretation of the Interaction of Afferents"

Kiberneticheskiye Aspekty v Izuchenii Raboty Mozga (Cybernetic Aspects of the Study of the Brain's Functioning), Moscow, Nauka Publishing House, 1970, pp 255-261

Abstract: Certain engineering aspects of the interpretation of the interaction of afferents in biological nerve nets are viewed as valve-type action of some fibers with others.

A diagram of a formal neuron with resolving fibers is proposed.

When the formal neuron with resolving fibers and a neuron with inhibiting fibers are synthesized according to the same threshold diagram, the diagram of the formal neuron with resolving fibers preserves a functional completeness in a specific sense, and it proves to be more economical, that is, it requires less apparatus for its implementation.

USSR

MKRTCHYAN, R. Ye., Institute of Mathematics and Mechanics, Academy of
Sciences, Armenian SSR

"Large Deformations of an Incompressible Elastic Body Reinforced With a
Unidirectional Structure of Thin Elastic Fibers"

Abstract: Some properties of a continuous incompressible elastic body
reinforced with a strictly unidirectional structure of thin elastic fibers
are investigated on the basis of general nonlinear elasticity theory. The
fibers have a much higher modulus of elasticity than does the surrounding
material. The resistance of the material to tension and compression de-
formations along the fibers is assumed to be different.

Also dealt with are problems of elongation and symmetrical expansion of a
circular cylindrical tube, and the cylindrical flexure of a rectangular
parallelepiped, which are reinforced in an annular direction.

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USSR

MKRTCHYAN, S. O.

"New Types of Formal Neurons and Methods of Their Synthesis. Report II."

Probl. Bioniki. Resp. Mezhved. Temat. Nauch.-Tekhn. Sb. [Problems of Bionics.
Republic Interdepartmental Thematic Scientific and Technical Collection],
1972, No 9, pp 83-89 (Translated from Referativnyy Zhurnal Kibernetika, No 4,
1973, Abstract No 4V721).

Translation: An algorithm is described for synthesis of a formal neuron
with FNS spontaneous fibers. Comparative analysis is presented of various
types of FN from the standpoint of technical realization. Certain biological
interpretations of the results produced are presented.

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USSR

MKRTCHYAN, S. O.

"New Types of Formal Neurons and Methods of Their Synthesis.   Report I."

Probl. Bioniki. Resp. Mezhved. Temat. Nauch.-Tekhn. Sb. [Problems of Bionics.
Republic Interdepartmental Thematic Scientific and Technical Collection],
1972, No 9, pp 77-83 (Translated from Referativnyy Zhurnal Kibernetika, No 4,
1973, Abstract No 4V720, by the author).

Translation: New types of formal neurons are studied, functionally equivalent
to the McCulloch formal neuron. They are produced on the basis of interpreta-
tion of the interaction of afferents of the biological original.   Formulas
are presented for synthesis of three-input type FNR and FNO neurons based on
a fixed threshold diagram.

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USSR

MKRTCHYAN, S. O., GAZIYAN, V. N., POTAPOV, V. I.

"Synthesis of Formal Neurons With a Minimum Number of Fibers by the Method of Threshold Diagram Selection"

Translation: Algorithms for construction of a minimizing threshold diagram are presented for synthesis of formal neurons with interacting fibers of the "inhibit", "enable" and "union" types. Authors' abstract.

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